

## The XCAMLITE1080P Series Camera Help Manual



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## 1 The Application of the XCAMLITE1080P Series Camera



Figure 1-1 XCAMLITE1080P Series Camera

The XCAMLITE1080P series camera is intended to be used for the acquisition of digital images from the stereo microscope and biological microscope with HDMI interface. The basic characteristic is listed as below:

- Sony Starvis back illuminated CMOS sensor
- FHD HDMI video outputs
- SD card for the captured image and video storage
- Embedded XCamView for the control of the camera
- With strong ISP and other related processing functions

## 2 XCAMLITE1080P Series Camera Datasheet and Functions(1)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity	FPS/Resolution	Binning	Exposure(ms)
XCAMLITE1080PA XPLITE1080PA	Sony IMX307(C) 1/2.8"(5.57x3.13)	2.9x2.9	1300mv with 1/30s	60@1920*1080(HDMI)	1x1	0.01~1000

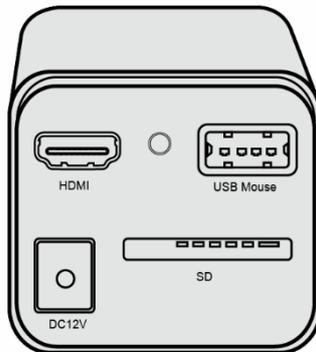


Figure 2-1 Available Ports on the Back Panel of the Camera Body

Interface and Button	Function Description
HDMI	Comply with HDMI1.4 standard. 1080P format video output for standard FHD monitor
LED	LED status indicator
USB Mouse	Connect USB mouse for easy operation with embedded XCamView software
DC12V	Power adapter connection (12V/1A)
SD	Comply with SDIO3.0 standard and SD card could be inserted for video and images storage
Video Output Interface	Function Description
HDMI Interface	Comply with HDMI1.4 standard; 60fps@1080P
Other Function	Function Description
Video Saving	Video format: 2M(1920*1080) H264 encoded MP4 file Video saving frame rate: 50~60fps (related with SD card performance)
Image Capture	2M (1920*1080) JPEG image in SD card

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Measurement Saving	Measurement information saved in different layer with image content; Measurement information is saved together with image content in burn in mode.
ISP Function	Exposure(Automatic / Manual Exposure) / Gain, White Balance(Manual / Automatic / ROI Mode), Sharpening, 3D Denoise, Saturation Adjustment, Contrast Adjustment, Brightness Adjustment, Gamma Adjustment, Color to Gray, 50HZ/60HZ Anti-flicker Function
Image Operations	Zoom In/Zoom Out, Mirror/Flip, Freeze, Cross Line, Overlay, Embedded Files Browser, Video Playback, Measurement Function
Embedded RTC(Optional)	To support accurate time on board
Restore Factory Settings	Restore camera parameters to its factory status
Multiple Language Support	English / Simplified Chinese / Traditional Chinese / Korean / Thai / French / German / Japanese / Italian / Russian
<b>Operating Environment</b>	
Operating Temperature (in Centidegree)	-10°~ 50°
Storage Temperature (in Centidegree)	-20°~ 60°
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH

### 3 Dimension of XCAMLITE1080P Series

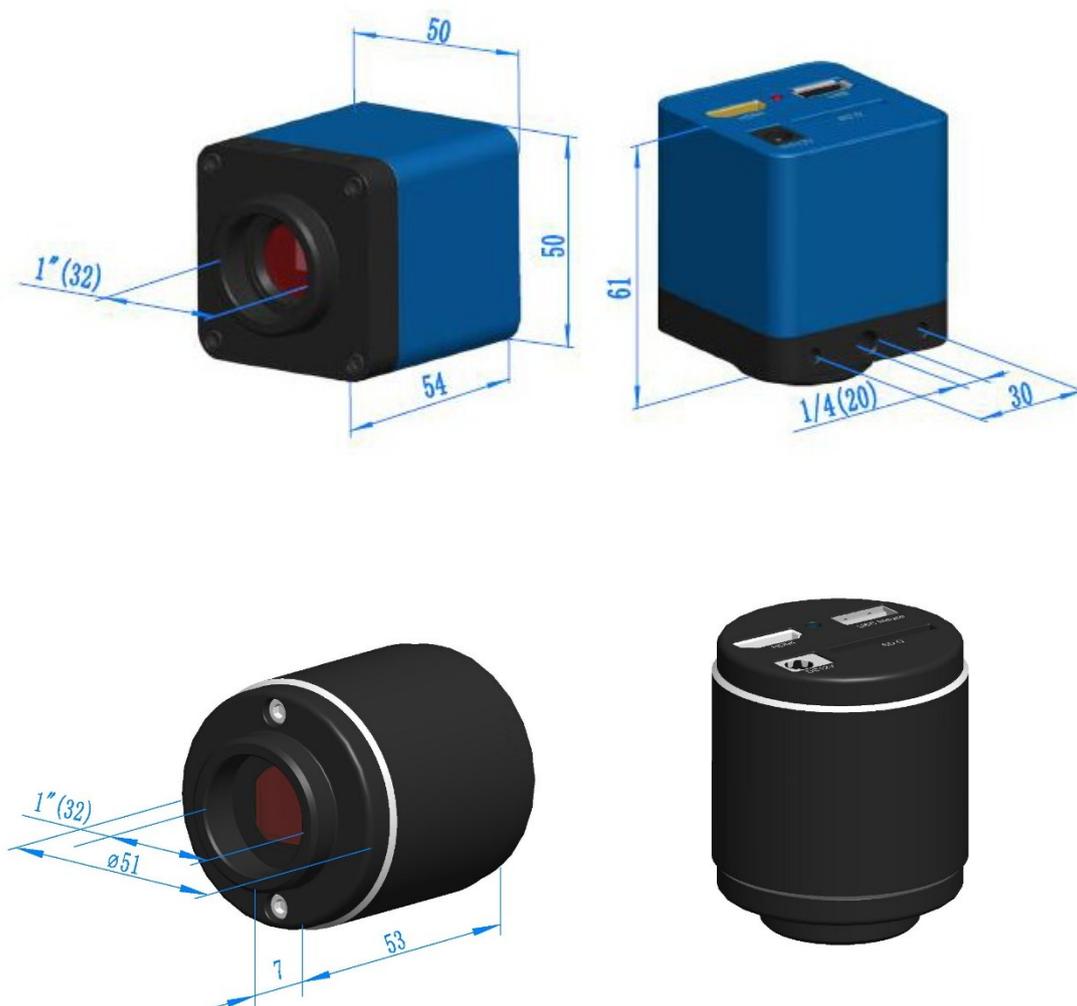


Figure 3-1 Dimension of XCAMLITE1080P Series

#### 4 XCAMLITE1080P Series Camera Packing Information



Figure 4-1 XCAMLITE1080P Series Camera (Square & Circular ) Packing Information

Standard Packing List			
A	Gift box : L:17.4cm W:17.4cm H:7.6cm (1pcs, 0.54kg/ box)		
B	XCAMLITE1080PA camera (square or circular shape)		
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A American standard: Model: POWER-U-12V1A(MSA-C1000IC12.0-12W-US); UL/CE/FCC European standard: Model: POWER-E-12V1A(MSA-C1000IC12.0-12W-DE); UL/CE/FCC EMI standard: FCC Part 15 Subpart B EMS standard: EN61000-4-2,3,4,5,6		
D	HDMI cable		
E	USB mouse/USB wireless mouse		
Optional Accessory			
F	Adjustable lens adapter	C-Mount to Dia.23.2mm eyepiece tube (Please choose 1 of them for your microscope)	108001/AMA037 108002/AMA050 108003/AMA075
G	Fixed lens adapter	C-Mount to Dia.23.2mm eyepiece tube (Please choose 1 of them for your microscope)	108005/FMA037 108006/FMA050 108007/FMA075
<b>Note :</b> For F and G optional items, please specify your camera type(C-mount, microscope camera or telescope camera), Touptek engineer will help you to determine the right microscope or telescope camera adapter for your application;			

<b>H</b>	108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube	
<b>I</b>	108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube	
<b>J</b>	Calibration kit	106011/TS-M1(X=0.01mm/100Div.); 106012/TS-M2(X,Y=0.01mm/100Div.); 106013/TS-M7(X=0.01mm/100Div., 0.10mm/100Div.)
<b>K</b>	SD card(4G or 8G)	

## 5 XCAMLITE1080P Series Camera Application Configurations

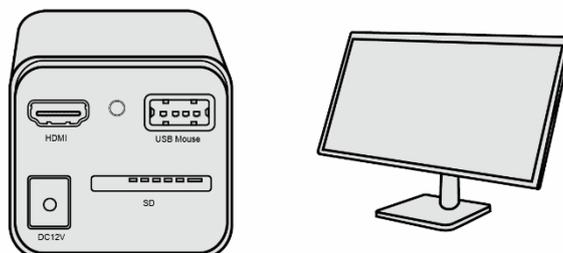
### 5.1 Camera Working Standalone with Built-in XCamView Software

For this application, apart from the microscope, you only need an HDMI monitor, the supplied USB mouse and the camera embedded [XCamView](#) software. The steps to start the camera are listed as below:

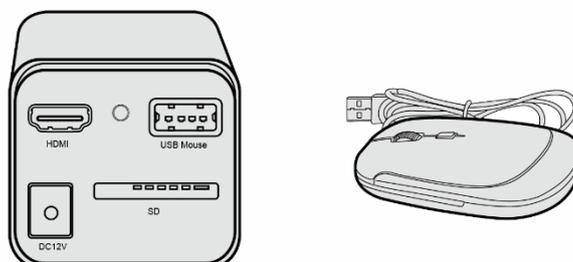


Figure 5-1 XCAMLITE1080P Series Camera with HDMI Monitor

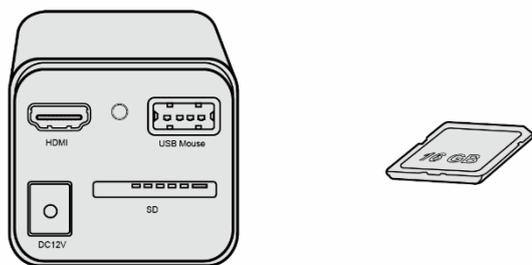
- Connect the camera to a HDMI monitor using the HDMI cable;



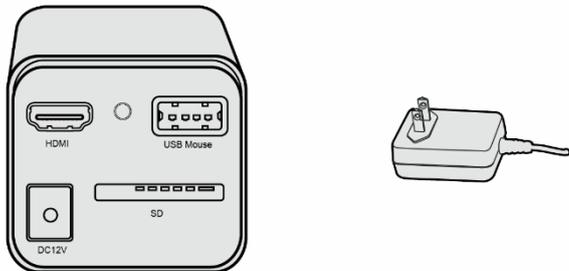
- Insert the supplied USB mouse to the camera's USB port;



- Insert the supplied SD card into the HDMI camera SD card;



- Connect the camera to the power adapter and switch it on;



- Turn on the monitor and view the video in the XCamView software. Move the mouse to the left ,top or bottom of the XCamView UI, different control panel or UI will pop up and users could operate with the mouse at ease.

## 6 Brief Introduction of XCAMLITE1080P Series Camera’s UI and Its Functions

### 6.1 XCamView UI

The XCAMLITE1080P series camera’s UI shown in Figure 6-1 includes a Camera Control Panel on the left of the video window, a Measurement Toolbar on the top of the video window and a Synthesis Camera Control Toolbar on the bottom of the video window.

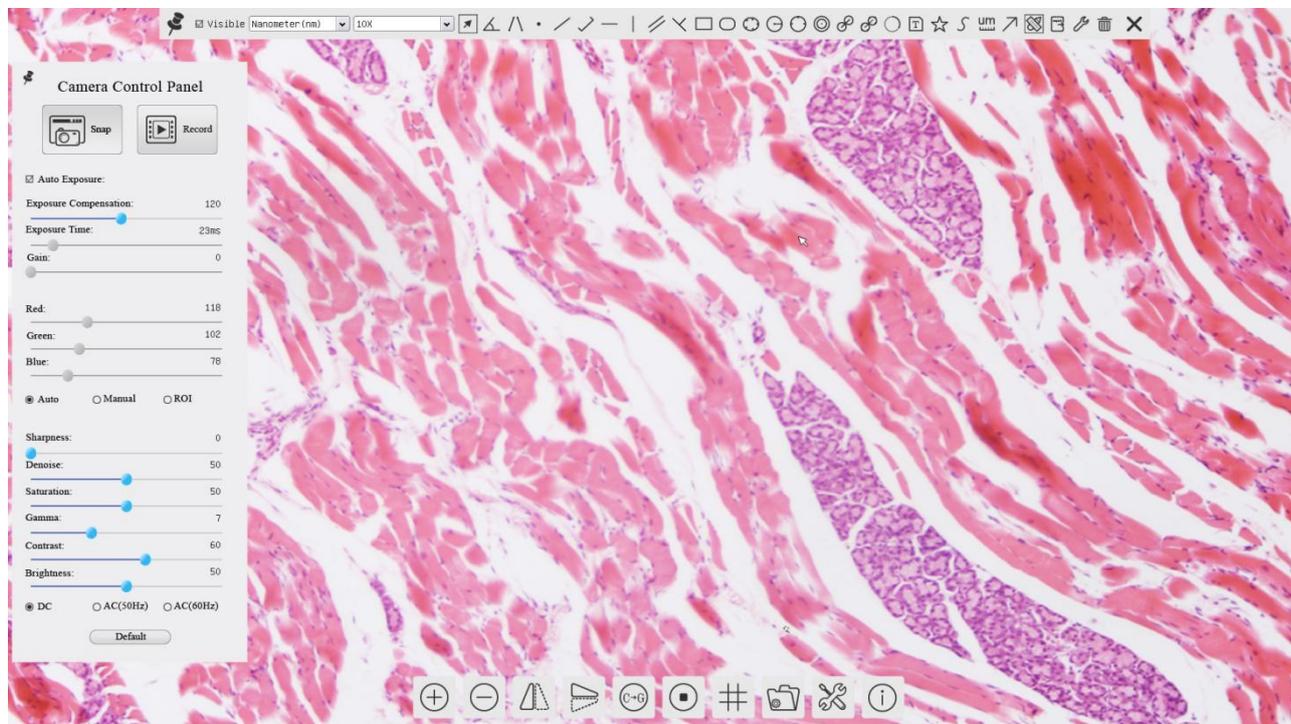


Figure 6-1 The XCAMLITE1080P Series Camera Control GUI

Notes	
1	To show the <a href="#">Camera Control Panel</a> , move your mouse to the left of the video window. See Sec.6.2 for details
2	<p>Move the mouse cursor to the top of the video window, a <a href="#">Measurement Toolbar</a> will pop up for calibration and measurement operations.</p> <p>When user left-clicks the <a href="#">Float/Fixed</a> button  on the <a href="#">Measurement Toolbar</a>, the <a href="#">Measurement Toolbar</a> will be fixed. In this case the <a href="#">Camera Control Panel</a> will not pop up automatically even if users move mouse cursor to left side of the video window. Only when user left-clicks the  button on the <a href="#">Measurement Toolbar</a> to exit from measuring procedure will they be able to do other operations on the <a href="#">Camera Control Panel</a>, or the <a href="#">Synthesis Camera Control Toolbar</a>. During the measuring process, when a specific measuring object is selected, an <a href="#">Object Location &amp; Attributes Control Bar</a>  will appear for changing location and properties of the selected object. See Sec.7.3 for details</p>
3	<p>When users move mouse cursor to the bottom of the video window, the <a href="#">Synthesis Camera Control Toolbar</a> will pop up automatically.</p> <p>. See Sec.6.4 for details.</p>

## 6.2 The Camera Control Panel on the Left Side of the Video Window

The [Camera Control Panel](#) controls the camera to achieve the best video or image quality according to the specific applications; It will pop up automatically when the mouse cursor is moved to the left side of the video window. Left-clicking  button to achieve [Display/Auto Hide](#) switch of the [Camera Control Panel](#).

Camera Control Panel	Function	Function Description
	Snap	Capture image and save it to the SD card
	Record	Record video and save it to the SD card
	Auto Exposure	When <a href="#">Auto Exposure</a> is checked, the system will automatically adjust exposure time and gain according to the value of exposure compensation
	Exposure Compensation	Available when <a href="#">Auto Exposure</a> is checked. Slide to left or right to adjust <a href="#">Exposure Compensation</a> according to the current video brightness to achieve proper brightness value
	Exposure Time	Available when <a href="#">Auto Exposure</a> is not checked. Slide to left or right to reduce or increase exposure time, adjusting brightness of the video
	Gain	Adjust <a href="#">Gain</a> to reduce or increase brightness of video. The Noise will be reduced or increased accordingly
	Red	Slide to left or right to decrease or increase the proportion of <a href="#">Red</a> in RGB on video
	Green	Slide to left or right to decrease or increase the proportion of <a href="#">Green</a> in RGB on video
	Blue	Slide to left or right to decrease or increase the proportion of <a href="#">Blue</a> in RGB on the video
	Auto White Balance	<a href="#">White Balance</a> adjustment according to the video continuously
	Manual White Balance	Adjust the <a href="#">Red</a> or <a href="#">Blue</a> item to set the video <a href="#">White Balance</a> .
	ROI White Balance	<a href="#">White Balance</a> could be adjusted when the ROI region is changed according to content inside the ROI region.
	Sharpness	Adjust <a href="#">Sharpness</a> level of the video
	Denoise	Slide left or right to denoise the video
	Saturation	Adjust <a href="#">Saturation</a> level of the video
	Gamma	Adjust <a href="#">Gamma</a> level of the video. Slide to the right side to increase gamma and to the left to decrease gamma.
	Contrast	Adjust <a href="#">Contrast</a> level of the video. Slide to the right side to increase contrast and to the left to decrease contrast.
	DC	For <a href="#">DC</a> illumination, there will be no fluctuation in light source so no need for compensating light flickering
	AC(50HZ)	Check <a href="#">AC(50HZ)</a> to eliminate flickering caused by 50Hz light source
	AC(60HZ)	Check <a href="#">AC(60HZ)</a> to eliminate flickering caused by 60Hz light source
Default	Restore all the settings in the <a href="#">Camera Control Panel</a> to default values	

### 6.3 The Measurement Toolbar on top of the Video Window

The **Measurement Toolbar** will pop up when moving mouse cursor to any place near the upper edge of the video window. Here is the introduction of the various functions on the **Measurement Toolbar**:



Figure 7-2 The Measurement Toolbar on the upper Side of the Video Window

Icon	Function
	Float/ Fix switch of the Measurement Toolbar
<input checked="" type="checkbox"/> Visible	Show / Hide Measurement Objects
Nanometer (nm)	Select the desired Measurement Unit
4X	Select Magnification for Measurement after Calibration
	Object Select
	Angle
	4 Points Angle
	Point
	Arbitrary Line
	3 Points Line
	Horizontal Line
	Vertical Line
	3 Points Vertical Line
	Parallel
	Rectangle
	Ellipse
	5 Points Ellipse
	Circle
	3 Points Circle
	Annulus
	Two Circles and its Center Distance
	3 Points Two Circles and its Center Distance
	Arc
	Text
	Polygon
	Curve

	Scale Bar
	Arrow
	Execute <a href="#">Calibration</a> to determine the corresponding relation between magnification and resolution, which will establish the corresponding relationship between measurement unit and the sensor pixel size. <a href="#">Calibration</a> needs to be done with the help of a micrometer. For detailed steps of carrying out <a href="#">Calibration</a> please refer to <a href="#">ToupView help manual</a> .
	Export the Measurement information to CSV file(*.csv)
	Measurement Setup
	Delete all the measurement objects
	Exit from Measurement mode
	When the measurement ends, left-click on a single measuring object and the <a href="#">Object Location &amp; Properties Control Bar</a> will show up. User could move the object by dragging the object with the mouse. But more accurate movement could be done with the control bar. The icons on the control bar mean <a href="#">Move Left</a> , <a href="#">Move Right</a> , <a href="#">Move Up</a> , <a href="#">Move Down</a> , <a href="#">Color Adjustment</a> and <a href="#">Delete</a> .

**Note:**

1) When user left-clicks [Display/Hide](#) button  on the [Measurement Toolbar](#), the [Measurement Toolbar](#) will be fixed. In this case the [Camera Control Panel](#) will not pop up automatically even if moving the mouse cursor to the left edge of the video window. Only when user left-click the  button on the [Measurement Toolbar](#) to exit from the measurement mode will they be able to doing other operations with the [Camera Control Panel](#) or the [Synthesis Camera Control Toolbar](#).

2) When a specific [Measurement Object](#) is selected during the measurement process, the [Object Location & Attributes Control Bar](#)  will appear for changing the object location and properties of the selected objects.

**6.4 Icons and Functions of the Synthesis Camera Control Toolbar at the Bottom of the Video Window**



Icon	Function	Icon	Function
	<a href="#">Zoom In</a> the Video Window		<a href="#">Zoom Out</a> the Video Window
	<a href="#">Horizontal Flip</a>		<a href="#">Vertical Flip</a>
	<a href="#">Color/Gray</a>		<a href="#">Video Freeze</a>
	<a href="#">Display Cross Line</a>		<a href="#">Browse Images and Videos in the SD Card</a>
	<a href="#">Settings</a>		<a href="#">Check the Version of XCamView</a>

The  [Setting](#) is relatively more complicated than the other functions. Here is more information about it:

6.4.1 Setting>Measurement

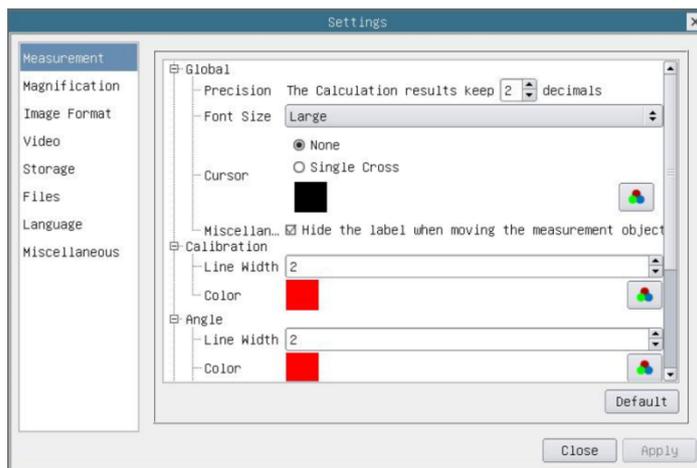


Figure 6-2 The Measurement Setup

Global	Precision	Used to set the number of digits after the decimal point of the measurement result
Calibration	Line Width	Used for defining width of the lines for calibration;
	Color	Used for defining color of the lines for calibration;
	EndPoint	Type: Used for defining shape of the endpoints of lines for calibration: Null means no EndPoints, rectangle means rectangle type of endpoints. It makes alignment more easily;
Point, Angle, Line, Horizontal Line, Vertical Line, Rectangle, Circle, Ellipse, Annulus, Two Circles, Polygon, Curve		
	Left-click the  along with the Measurement command mentioned above will unfold the corresponding attribute settings to set the individual property of the Measurement Objects.	

6.4.2 Setting>Magnification

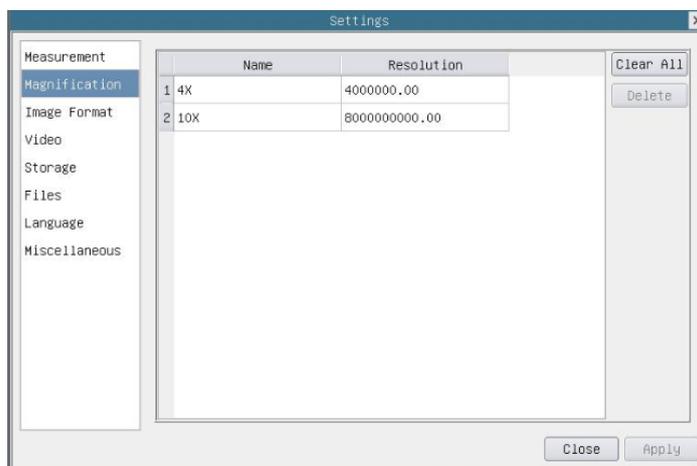


Figure 6-3 Comprehensive Magnification Calibration Settings Page

Name	The name of the magnification, usually the magnification of the objective of the microscope is used as the magnification name when calibration, such as 4X, 10X, 100X, etc. Besides, other user-defined information could be added into the magnification name too, for example, microscope model, operator name, etc.
Resolution	Pixels per meter. Image device like microscopes have high resolution value;
Clear All	Click the Clear All button will clear the calibrated magnifications;
Delete	Click Delete to delete the selected magnification;

6.4.3 Settings>Image Format

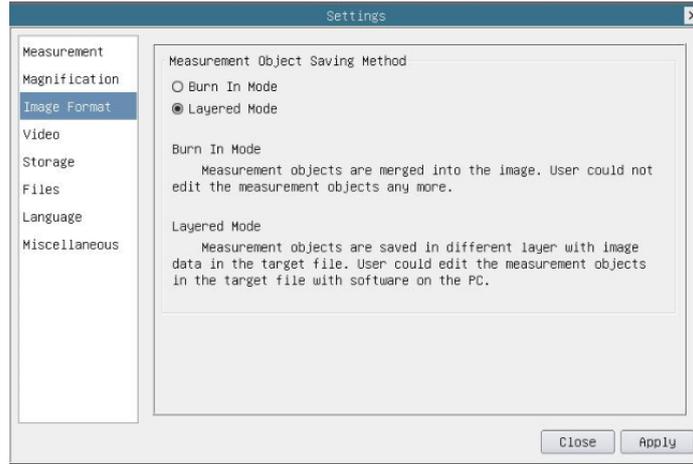


Figure 6-4 Comprehensive Image Format Settings Page

<p>Measurement Object Save Method</p>	<p><b>Burn in Mode:</b> The measurement objects are merged into the current image. User could not edit the measurement objects anymore. This mode is not reversible.</p> <p><b>Layered Mode:</b> The measurement objects are saved in different layer with current image data in the target file. User could edit the measurement objects in the target file with some software on the PC. This mode is reversible.</p>
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6.4.4 Settings>Video

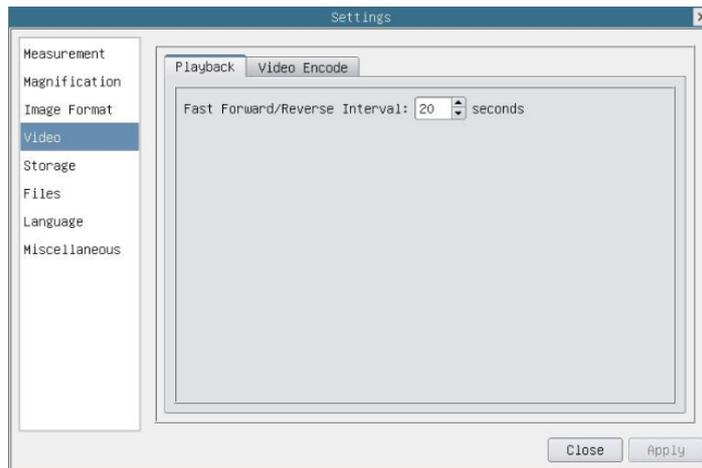


Figure 6-5 Comprehensive Setting of Video Settings Page-Playback

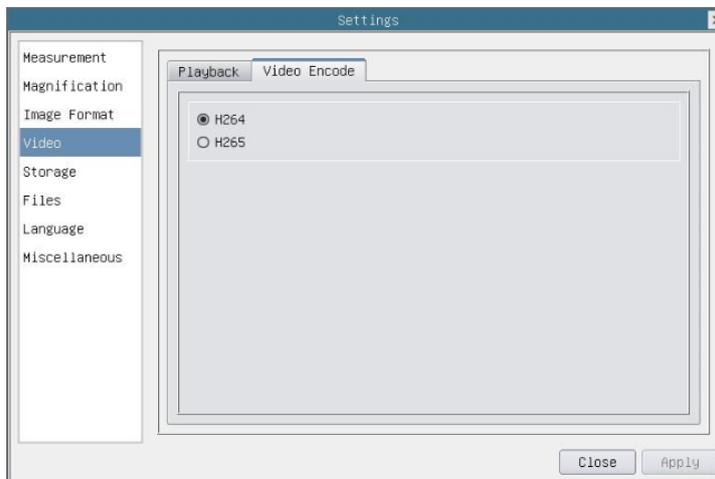


Figure 6-6 Comprehensive Setting of Video Settings Page-Video Encode

<p>Fast Forward/Reverse Interval</p>	<p>The time interval of the playback of video files.</p>
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<b>Video Encode</b>	<p><b>H264:</b> The encoding format of the video files is H264 format.</p> <p><b>H265:</b> The encoding format of the video files is H265 format.</p>
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### 6.4.5 Setting>Storage

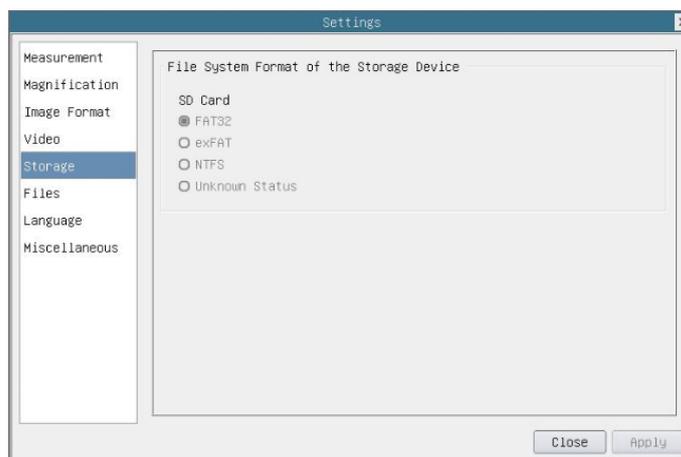


Figure 6-7 Comprehensive Setting of SD Card Setting Page

<b>Storage Device</b>	<b>SD Card:</b> SD Card is only supported as the storage device.
<b>File System Format of the Storage Device</b>	<p>List the file system format of the current storage device</p> <p><b>FAT32:</b> The file system of SD card is FAT32. The maximum video file size of single file is 4G Bytes;</p> <p><b>exFAT:</b> The file system of SD card is exFAT. The maximum video file size of single file is 4G Bytes;</p> <p><b>NTFS:</b> The file system of SD card is NTFS. The maximum video file size of single file is 4G Bytes. Use PC to format the SD cards and switch between FAT32, exFAT and NTFS.</p> <p><b>Unknown Status:</b> SD card not detected or the file system is not identified;</p>

### 6.4.6 Setting>Files

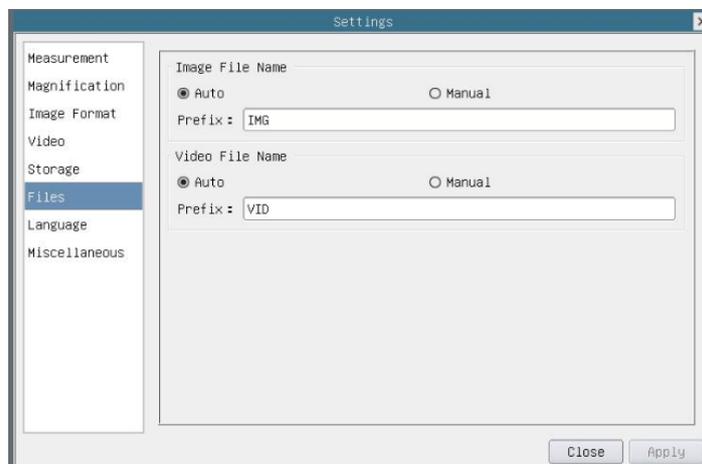


Figure 6-8 Comprehensive Setting of Files Settings Page

<b>Image File Name</b>	<p><b>Auto:</b> The image files will be saved automatically with the specified prefix.</p> <p><b>Manual:</b> Users has to specify the file name before image saving.</p>
<b>Video File Name</b>	<p><b>Auto:</b> The video file will be saved automatically with the specified prefix.</p> <p><b>Manual:</b> Users has to specify the video file name before video recording.</p>
<b>Note:</b> The maximum video file size is 4G Bytes. Multiple video files may be generated automatically during long time video recording.	

6.4.7 Setting>Language

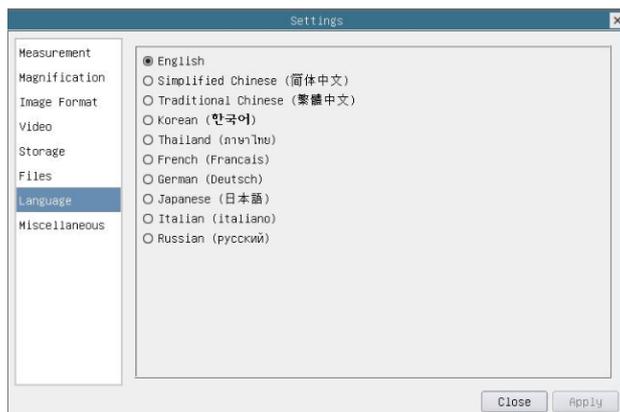


Figure 6-9 Comprehensive Setting of Language Selection Setting Page

English	Set language of the whole software into English;
Simplified Chinese	Set language of the whole software into Simplified Chinese;
Traditional Chinese	Set language of the whole software into Traditional Chinese;
Korean	Set language of the whole software into Korean;
Thailand	Set language of the whole software into Thailand;
French	Set language of the whole software into French
German	Set language of the whole software into German
Japanese	Set language of the whole software into Japanese
Italian	Set language of the whole software into Italian
Russian	Set language of the whole software into Russian

6.4.8 Setting>Miscellaneous

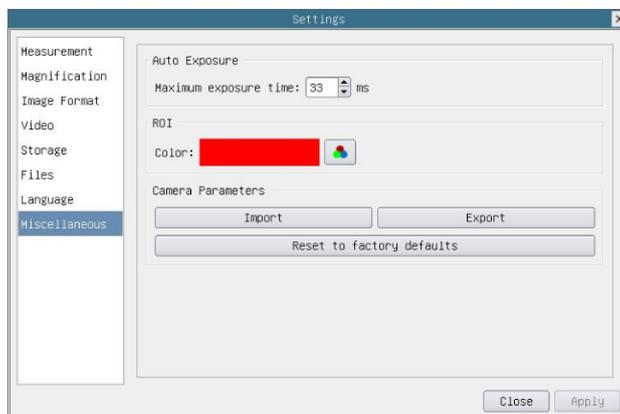


Figure 6-10 Comprehensive Miscellaneous Settings Page

Auto Exposure	The maximum exposure time during auto exposure process could be specified. Setting this item to a lower value could guarantee a faster frame rate during auto exposure.
ROI Color	Choosing the ROI rectangle line color
Camera Parameters Import	Import the Camera Parameters from the SD card to use the previously exported Camera Parameters
Camera Parameters Export	Export the Camera Parameters to the SD card to use the previously exported Camera Parameters
Reset to factory defaults	Restore camera parameters to its factory status;

## 7 Sample Photos Captured with XCAMLITE1080P Series Camera

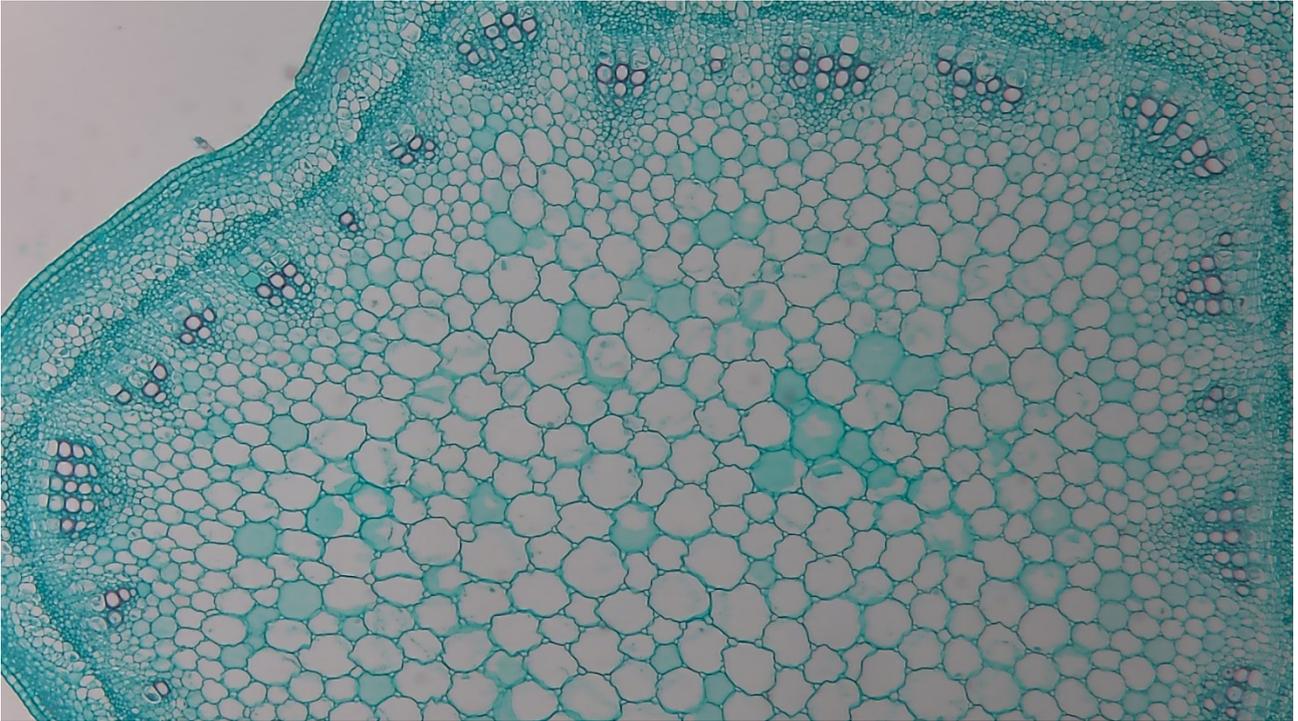


Figure 7-1 Alfalfa Stem Captured with XCAMLITE1080PA

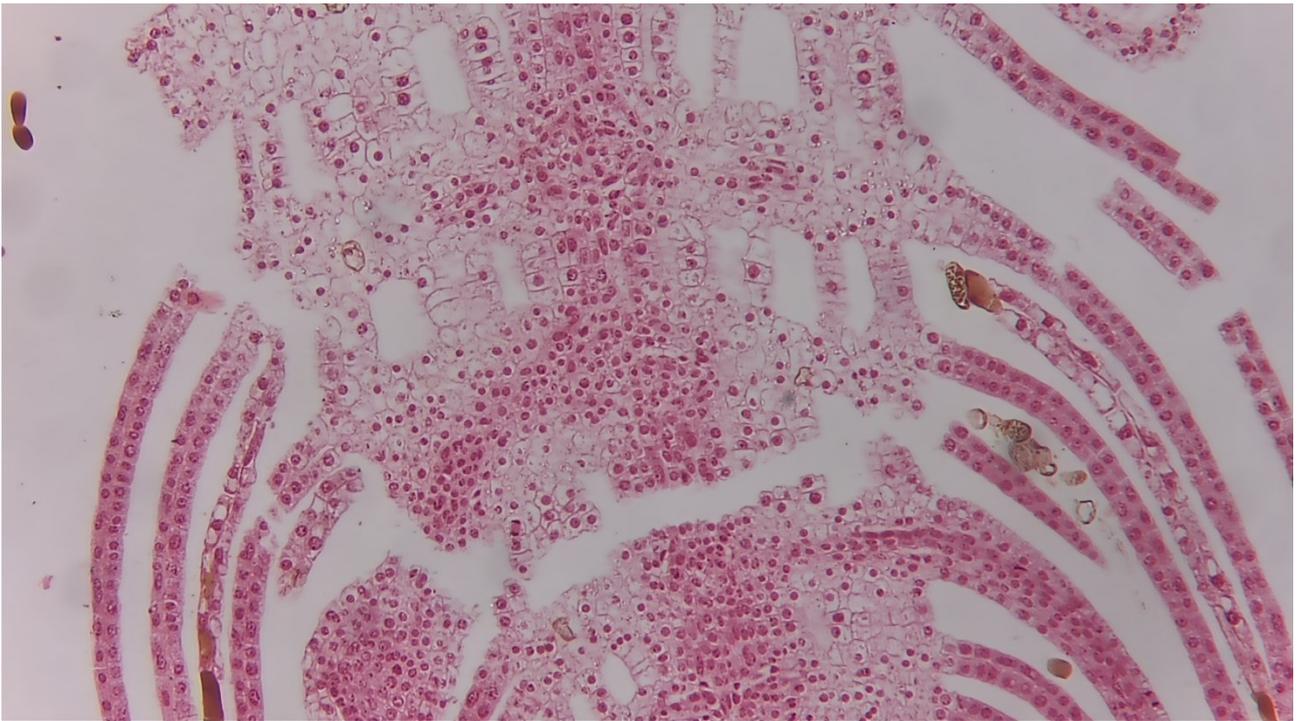


Figure 7-2 Top Bud. Captured with XCAMLITE1080PA

## 8 Contacting Customer Service

Please contact your local distributor if you have any questions about the product.